

Robert Bendavid, MD  
Jack Abrahamson, MD  
Maurice E. Arregui, MD  
Jean Bernard Flament, MD  
Edward H. Phillips, MD

Editors

# Abdominal Wall Hernias

## Principles and Management

Foreword by Raymond C. Read, MD

Preface by René Stoppa, MD

With 738 Figures, 46 in Full Color



Springer

Robert Bendavid, MD  
Toronto, Canada

Jack Abrahamson, MD  
Haifa, Israel

Maurice E. Arregui, MD  
Indianapolis, IN, USA

Jean Bernard Flament, MD  
Reims, France

Edward H. Phillips, MD  
Los Angeles, CA, USA

Library of Congress Cataloging-in-Publication Data  
Abdominal wall hernias : principles and management / editors, Robert Bendavid. . . [et al].

p. ; cm.

Includes bibliographical references and index.

ISBN 0-387-95004-4 (hardcover : alk. paper)

1. Hernias—Surgery. 2. Hernias—Pathophysiology. I. Bendavid, Robert.

[DNLM: 1. Hernia, Ventral. 2. Abdomen—pathology. 3. Abdomen—surgery. 4. Surgical  
Procedures, Operative. WI 955 A135 2000]

RD621 .A193 2000

617.5'59—dc21

00-020620

Printed on acid-free paper.

© 2001 Springer-Verlag New York, Inc.

All rights reserved. This work may not be translated or copied in whole or in part without the written permission of the publisher (Springer-Verlag New York, Inc., 175 Fifth Avenue, New York, NY 10010, USA), except for brief excerpts in connection with reviews or scholarly analysis. Use in connection with any form of information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed is forbidden.

The use of general descriptive names, trade names, trademarks, etc., in this publication, even if the former are not especially identified, is not to be taken as a sign that such names, as understood by the Trade Marks and Merchandise Marks Act, may accordingly be used freely by anyone.

While the advice and information in this book are believed to be true and accurate at the date of going to press, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Production coordinated by Chernow Editorial Services, Inc., and managed by Steven Pisano;  
manufacturing supervised by Jacqui Ashri.

Typeset by Matrix Publishing Services, Inc., York, PA.

Printed and bound by Maple-Vail Book Manufacturing Group, York, PA.

Printed in the United States of America.

9 8 7 6 5 4 3 2 1

ISBN 0-387-95004-4

SPIN 10750916

Springer-Verlag New York Berlin Heidelberg  
A member of BertelsmannSpringer Science+Business Media GmbH

BEST AVAILABLE COPY

# Mesh Inguinodynia After Inguinal Herniorrhaphy

James R. Starling

Complications after inguinal herniorrhaphy are relatively rare. Postherniorrhaphy chronic inguinodynia (neuralgia) occurs in 1 to 2% of patients.<sup>1-6</sup> These patients report severe, debilitating pain and pose a difficult ongoing management problem. Treatment modalities have included local analgesics and steroid injections, various drugs, behavioral therapy, cryotherapy, alcohol or phenol injections, and neurectomy or neurolysis. Postherniorrhaphy pain syndromes are thought to be caused by injury to or entrapment of the ilioinguinal, iliohypogastric, genitofemoral, or lateral cutaneous nerves. Onset is usually immediate, although delayed onset can occur, possibly due to scarring or neuroma formation.

The use of prosthetic mesh is well accepted and is rapidly becoming a standard approach to hernia repair. Lichtenstein has done much to popularize its use; using his "tension-free hernioplasty," his clinic has reported a 0.2% recurrence rate.<sup>7,8</sup> Nevertheless, patients still present with chronic inguinodynia, and steps to avoid this problem have been recommended.<sup>1,5</sup>

Mesh is used in laparoscopic herniorrhaphy with increasing frequency and good results in terms of recurrences.<sup>9,10</sup> Among the advantages of laparoscopic herniorrhaphy are less postoperative pain, earlier return to normal activities, and a novel approach to difficult recurrent or bilateral repairs. However, chronic inguinal pain is among the reported complications of this procedure.<sup>11-14</sup> In addition, there have been some unusual neurological findings after laparoscopic hernia repairs involving inadvertent stapling of peripheral sensory nerves.<sup>11</sup> Entrapment of the lateral cutaneous nerve of the thigh results in the syndrome known as *meralgia paresthetica*.

## Reports

Initial reports of inguinodynia date back to the 1940s, describing genitofemoral causalgia.<sup>15</sup> Hagen and co-workers reported that 10.6% of patients who had open inguinal herniorrhaphy, especially McVay's repair, complained of moderate or severe pain 2 years after the operation.<sup>6</sup> These early reports predate the introduction of prosthetic mesh for hernia repair; now that use of mesh implants of all kinds is becoming commonplace, one would expect a corresponding increase in the incidence of chronic inguinodynia following these forms of inguinal hernia repairs.

Robbins and Rutkow have the largest experience with mesh plug herniorrhaphy. Their experience with over 3000 patients indicates

no correlation between pain or numbness and the preservation or sacrifice of the peripheral nerves. They have never operated on any of their patients for chronic inguinodynia. They believe that chronic postherniorrhaphy inguinodynia is due to the sequelae of suturing under tension rather than to frank nerve entrapment.<sup>16-18</sup>

A further development is the enthusiastic use of mesh in laparoscopic hernia repairs. Recently, reports of entrapment syndromes began appearing in the literature; these have included, particularly in earlier reports, entrapment of the lateral cutaneous nerve of the thigh (lateral femoral cutaneous nerve) and, more recently, injuries to the ilioinguinal and iliohypogastric nerves.<sup>11-14,19</sup> Injury to the femoral nerve has also been described. The incidence of chronic inguinal neuralgia has been reported to be 0.3 to 2.6% after laparoscopic herniorrhaphy, depending on the technique employed: "Intraperitoneal onlay mesh (IPOM), 0.5 to 4.6%; transabdominal preperitoneal (TAPP), 1.2 to 2.2%; and total extraperitoneal (TEP), 0 to 0.6%."<sup>20</sup> Seid and Amos reported nine such cases, but others have given case reports only.<sup>11,13,19</sup> Three patients in our own initial series and 13 additional patients developed chronic pain after laparoscopic herniorrhaphy. The involvement of mesh plugs as a possible cause of chronic inguinodynia has not been reported or denied.<sup>16</sup>

Nerves can become tightly incorporated into the interstices of the mesh, making separation impossible (Fig. 112.1). Following incorporation by fibrotic material, mesh tends to contract, possibly causing kinking or entrapment of nerves (Fig. 112.2). Bocchi reported a 7.6% incidence of late postoperative pain after inguinal herniorrhaphy, which he attributes to contact between frayed nerves and the polypropylene mesh.<sup>20</sup>

Why some patients with mesh herniorrhaphy develop such debilitating pain remains an enigma. Although the cause may be obvious, as when a surgical clip is placed around a nerve or when direct injury results in a traumatic neuroma, granuloma, or severe perineural fibrosis (Fig. 112.3), there are times when nothing abnormal can be found.

## Treatment

Most early surgical treatments of chronic inguinodynia were performed on patients without mesh repairs.<sup>21</sup> Many of these patients experienced pain relief following exploration and neurectomy. As there are so few reports on treatment of pain after mesh hernior-